ART Specifications and Product History

Ad Packs: M55, M56, M57, M58, M59, M60

2023385000

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From: .B. K. Hendricks

Subject: .ART AD PACK PRODUCTION HISTORY (M55 THROUGH M60)

The enclosed report reviews the production history for ART Ad Pack tests M55 through M60. Included in the report are specifications for the primary process and the cigarette production. Analytical data representing various points/parameters is also presented.

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ART Specifications and Product History

Ad Packs

M55
M56
M57
M59
M60

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2023385003

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Introduction

Six Ad Pack tests were requested by Marketing Research. (See Appendix) These test prototypes were produced at the R&D Semiworks using filler which was extracted at Bermuda 100 Pilot Plant. The Ad Pack tests and cigarette models are described in Table 1. To provide a history of each prototype, codes for filler runs and expanded filler are included.

Overview of Ad Pack Production

Primary Processing

Figure 1 illustrates a general view of the steps required from blending through cigarette production. Specific parameters of each step for processing are detailed in the following sections. Included is the primary process for Semiworks and reference analytical data (Tables 3-12 and Figures 1a, 2-3).

The ART blend is designated as DL Bright, DL Burley, and MT Oriental. DL Bright and DL Burley are comprised of bodied bright, thin bright, bodied burley, and thin burley. Conventional handling of the blend through conditioning steps to the total blend silo is required.

Pretreatment of the filler is required prior to the extraction process and includes two casing applications and cutting of the strip. The first casing step is designated as the pre cut casing and the second casing is designated as the post cut casing. The casing solution consists of propylene glycol, glycerin, ammonium bicarbonate, and water. Casing materials and filler OV are critical in obtaining the desired level of nicotine removal during extraction.

Following extraction the filler is declumped in a non-heated rotating cylinder. Extracted filler receives a final casing before cigarette manufacturing. The final casing differs from conventional casing since cut filler is being cased. Extracted filler for expansion by-passes this final casing treatment; the expanded filler is added back before the aftercut is applied.

Cigarette Manufacturing

Three sets of cigarette specifications were established for the production of the Ad Pack ART prototypes. Specifications required standard non-tobacco materials. Ad Pack M58 used Merit filler and production specifications were modified since white tipping paper was requested for all samples. Cigarette configuration for all prototypes was also conventional.

Complete specifications and analytical data (Tables 14-19 and Figure 4) follow. Packaging materials listed in Table 13.

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Table 1

AD PACK PRODUCTION - OVERVIEW

Ad Pack	Description	Filler	Expanded	Cigarettes
M55	Merit Free Regular	89-292 89-293	89-287 89-289	X6D9GF 8mg FTC Tar
M57	Merit Free Ultra Lights Regular	89-297 89-298	89-288 89-294	X6D9GH 4mg FTC Tar
M59	Next Regular	89-295 89-296	89-288 89-294	X6D9GI 8mg FTC Tar
M56	Merit Free Menthol	89-290 89-291	89-289	X6D9GG 8mg FTC Tar
M60	Next Menthol	89-290 89-291	89-289	X6D9GJ 8mg FTC Tar
M56	Merit Free Menthol	89-302 89-303	89-299	X6D9GG-1 8mg FTC Tar
M60	Next Menthol	89-302 89-303	89-299	X6D9GJ-1 8mg FTC Tar
M56	Merit Free Menthol	89-305 89-306	89-304	X6D9GG-2 8mg FTC Tar
M60	Next Menthol	89-305 89-306	89-304	X6D9GJ-2 8mg FTC Tar
M58	Merit Free Regular	Merit	DIET	X6D9GE 8mg FTC Tar

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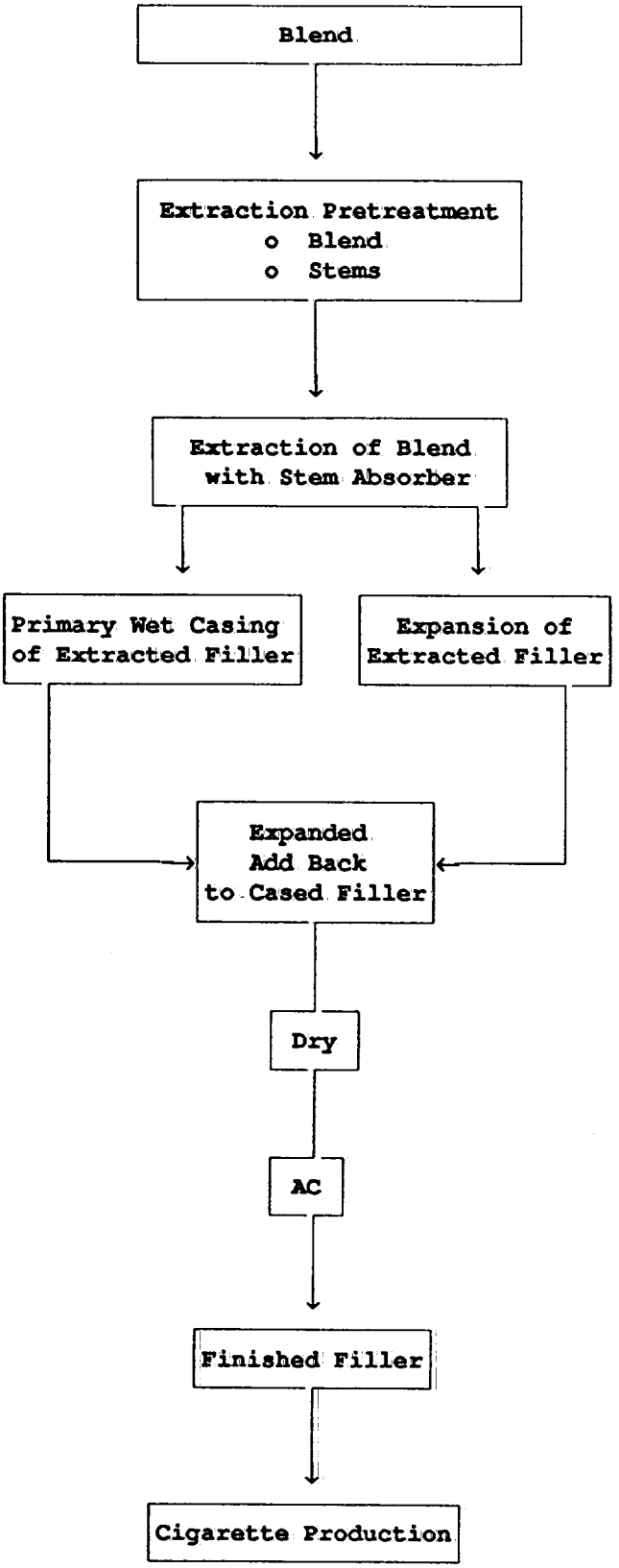

Figure 1

Flow Chart of Ad Pack Production

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Primary Specification

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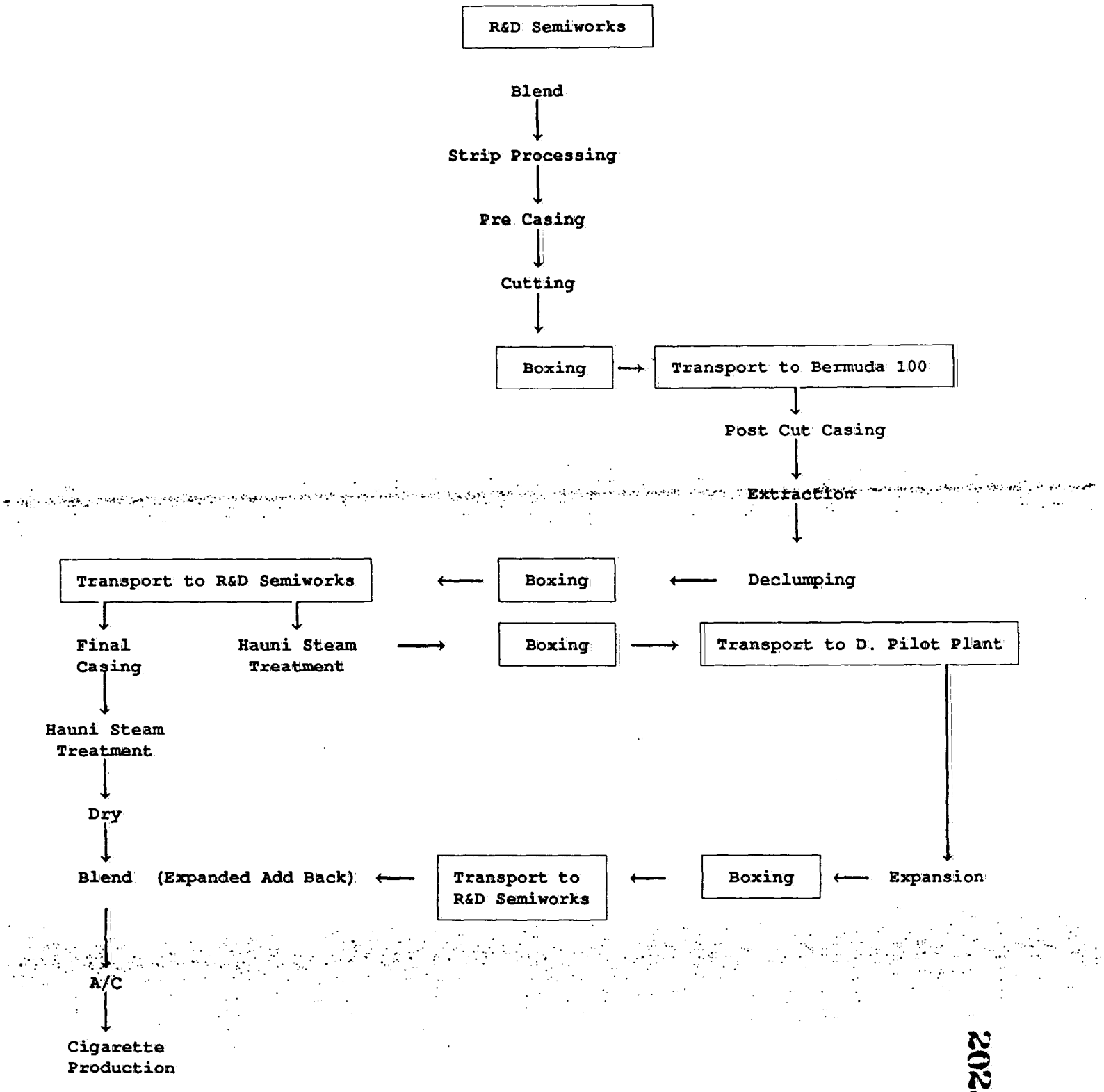

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Figure 1a.

Schematic of Processing

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DATE:_____

PROJECT NAME: Ad Pack M55-M56-M57-M59-M60

PRIMARY PROCESSING SPECIFICATION - Blend

FILLER DESCRIPTION:

BLEND FORMULA AT 12.0%:	%
DL Bright	68.64
DL Burley	19.54
MT Oriental	10.00

Stem:

CRS-Louisville

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PROJECT NAME: Ad Packs M55-M56-M57-M59-M60

PRIMARY PROCESSING SPECIFICATION

VACUUM CONDITIONING CYCLES

	Bright	Burley	Oriental
Evacuation 1			
Temp. (°F)	40	40	40
- Variable based on ambient condition			
Steam/Micro (gpm)	3	3	3
Steam/Micro Temp. (°F)	160	160	150
Hold Time (min)	3	3	1
Evacuation 2			
Temp. (°F)	110	110	110
Steam/Micro (gpm)	3	3	0
Steam/Micro Temp. (°F)	138	135	120
Hold Time (min)	3	3	0
Exit Tobacco Conditions			
OV (%)	15.0	15.0	17.0
Temp (°F)	145	145	130

Conditioning Cylinder:

Entering OV (%)	15.0	15.0	17.0
Steam Flow (lb/hr)		-- As Needed --	
Water Flow (gpm)		-- As Needed --	
Exiting OV (%) Target	18.5	18.5	18.5
Exiting Temp (°F) Specification	< 140	< 140	< 140

Separators:

Pad Recycle	Yes	Yes	Yes
Exit OV (%) Target	17.0	17.0	17.0

Blend Silo:

Exit OV (%) Specification	17.0	17.0	17.0

Critical OV target: adjust previous targets to achieve 17.0% exit OV at blend silo.

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PROJECT NAME: Ad Pack M55-M56-M57-M59-M60

PRIMARY PROCESSING SPECIFICATION - Stem Process

Stem Process:

	Typical Equipment Setting	Intermediate Process Target	Process Specification
Conditioning Cylinder			
Residence Time (min)			minimum 3
Exit Temp (°F)			160 ± 10
Exit OV (%)		15.5 ± 0.5	
Bulk Silo			
Residence Time (hr)			6-8
Stem Metering Tube			
Residence Time (min)		1.5 ± 0.5	
Exit Temp (°F)			200
Roller			
Inlet OV (%)		31 ± 1	
Stem Thickness (in.)			0.040 ± 0.005
Cutter			
Inlet OV (%)		31 ± 1	
Mouthpiece Press. (psi)	28		
Cheese Thickness (in.)	2.00-4.25		
Drum Speed (rpm)	250-300		
Cuts per inch			150
Dryer			
Exit OV (%)			12.0 ± 0.5

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PROJECT NAME: Ad Packs M55-M56-M57-M59-M60

PRIMARY PROCESSING SPECIFICATION - Stem Process

	Typical Equipment Setting	Intermediate Process Target	Process Specification
Stem Casing			
Formula Code			8206-138
Application Rate (gal/10,000 lb @ 12% OV)	575		
Monopotassium Citrate Add-on, % dwb			12 ± 1
Casing Temp. (°F)			135 ± 5
Atomization	Air		
Exit OV (%)		35 ± 1	

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PROJECT NAME: Ad Packs M55-M56-M57-M59-M60

PRIMARY PROCESSING SPECIFICATION

Pre Cut Casing:

	Typical Equipment Setting	Intermediate Process Target	Process Specification
Formula Code			8737-31A
Application Rate (gal/10,000 lbs. @ 12.0% OV)		130.5	
Application Temp (°F)			* 68-73
Strip Temperature (°F)		110 ± 5	
Atomization	Air		
Exit OV (%)		22.0 ± 0.5	
Target AB (% dwb)			1.5 ± 0.1
Target PG (% dwb)			1.0 ± 0.2
Target Gly (% dwb)			1.0 ± 0.2

*** PG/Gly/H_2O heated to 95°F, heat was removed and AB added. Target of 68-73 is result of endothermic reaction.**

Cutting:

Cut width (cpi)			30
OV (%)			22.0 ± 0.5

Post Cut Casing

Formula Code			8737-31B
* Application rate (gal/10,000 lb)		137.6	
Application Temp (°F)			80
Atomization	Air		
Exit OV (%)		26.5 ± 0.5	
Target AB (% dwb)			3.0 ± 0.2
Target PG (% dwb)			2.0 ± 0.3
Target Gly (% dwb)			2.0 ± 0.3

*** Cased weight at 22.0 ± 0.5% O.V.**

Extraction Process:

Pressure (psig)			3800 ± 50
Temperature (°F)			140 ± 1
Duration (M/M)			200
CO2 Velocity (ft/min.)	1.8		
Stem/Filler Ratio (lbs/lbs dwb)		1/1	
Extraction, (% dwb)			96.5 minimum

Clump Separation:

Exit OV (%)		26.5 ± 0.5	

Storage Silo:

Exit OV (%)		26.0 ± 0.5	

NOTE: Cut rag diversion for expansion; treatment thru steam tunnel prior to shipment for expansion.

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PROJECT NAME: Ad Packs M55-M56-M57-M59-M60

PRIMARY PROCESSING SPECIFICATION - Pre-expansion treatment

	Typical Equipment Setting	Intermediate Process Target	Process Specification
Steam Tunnel			
Steam Flow Rate (lb/hr)	40% of Tobacco Flow		
Steam Pressure (psig)	58		
OV Gain across tunnel (%)		2.0	
Tunnel Speed (rpm)	To bed depth of 3"		
Exit Filler Temp (°F)			200 ± 5.0
Dryer			
Inlet OV (%)		26.5 ± 1.0	
Inlet Temp (°F)		140-170	
Exit OV (%)			24.0 ± 1.0
Exit Temp (°F)		Ambient	
Air Flow	Counter current		
Steam Coil Pressure (psig)	0		
Air Flow (cfm)	200-300		
Air Temp (°F)	Ambient		
Expansion of ART Filler			
OV Feed (%)		22.3	
Tower Temperature (°F)			500
Tobacco throughput (lb/hr)	187.5		
Tower velocity (ft/sec.)	85		
OV X-Tower (%)		6.3	
Product OV (%)			11.5 ± 0.5

NOTE: Filler for expansion by-passes casing; add back occurs after dryer.

Bermuda 100 extraction runs 89-287, 89-288, 89-289, 89-294, 89-299, and 89-304 were used in the production of Ad Pack filler. Only runs 89-299 and 89-304 were processed using the Hauni Steam Tunnel. The remaining runs, 89-287, 89-288, 89-289 and 89-294 were not processed thru the Hauni Steam Tunnel.

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PROJECT NAME: Ad Packs M55-M56-M57-M59-M60

PRIMARY PROCESSING SPECIFICATION

	Typical Equipment Setting	Intermediate Process Target	Process Specification
Final Casing:			
Formula Code			8598-52
Infeed OV (%)		26.0 ± 0.5	
Infeed Tobacco Temp (°F)		Ambient	
* Application rate (gal/10,000 lb)		107	
Atomization		Air	
Application temp (°F)		130	
Exit Cut rag Temp (°F)		115-120 *	
Exit OV (%)		28.5 ± 2.0	

*** Uncased strip weight at 12% O.V. as 10,000 lbs. total blend. (Do not adjust for ET)**

Note: Steam injected into inlet end of cylinder to elevate cut rag temperature to target.

Steam Tunnel:			
Steam Flow Rate (lb/hr)	40 % of Tobacco	Flow Rate	
Steam Pressure (psig)	58		
OV gain across tunnel (%)		2.0	
Tunnel Speed (rpm)	To bed depth of	3 inch (410 rpm Semiworks)	
Exit Filler Temp. (°F)		200 ± 5	
Dryer:			
Inlet OV (%)		28.5 ± 2.0	
Inlet Temp (°F)		140-170	
Exit OV (%)		13.0 ± 0.5	
Exit Temp (°F)	120-125		
Air flow	Counter-current		
Steam Coil Pressure (psig)	As Needed		
Air Flow (cfm)	As Needed	(< 300 scfm)	
Air Temp (°F)	200		
Expanded Add Back:			
Add Back Rate (%)			20.0
OV (%)			12.5

AFTERCUT APPLICATION:	**Regular**	**Menthol**
Flavor Formulation Code, specification	8598-51A	8414-76
Filler temperature entering cylinder, Target (°F)	Ambient	Ambient
Filler moisture entering cylinder, Target OV (%)	13.0 ± 0.5	13.0 ± 0.5
Filler outlet temperature, Target (°F)	Ambient	Ambient
Filler outlet moisture, Target OV (%)	13.5 ± 0.5	13.5 ± 0.5
*Application Rate (gal/10,000lb), specification	22.9	28.0
Application temperature, Target (°F)	Ambient	Ambient
Atomization Specification	Air	Air

* Rate for cased filler @ 13.0% O.V., 20% expanded included.

Silo:

Exit OV (%) Specification	13.5 ± 0.5	13.5 ± 0.5

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Primary Analytical

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Table 2

SEMIWORKS PRE-TREATMENT - TOBACCO ANALYSIS

Analyses	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306
Exit Silo																		
Tobacco Feed OV, %	17.4	17.5	16.6	16.2	16.2	15.9	15.7	16.9	16.4	16.8	16.6	16.4	16.4	15.6	15.0	15.2	15.2	15.7
Exit Cutter																		
OV, %	24.2	22.2	22.5	21.0	21.7	20.5	20.2	20.8	20.8	22.1	21.4	21.9	21.5	20.7	21.2	21.3	21.4	20.9
Sol. NH_3 -																		
Tobacco Strip, %	0.18	0.18	0.18	0.18	0.12	0.18	0.19	0.16	0.15	0.16	0.16	0.16	0.15	0.15	0.18	0.14	0.14	0.12
Exit Cutter, %	0.49	0.44	0.41	0.35	0.38	0.38	0.38	0.42	0.35	0.43	0.39	0.40	0.38	0.43	0.43	0.40	0.41	0.37
Delta, %	0.31	0.26	0.23	0.17	0.26	0.20	0.19	0.26	0.20	0.27	0.23	0.24	0.23	0.28	0.25	0.26	0.27	0.25
Calc AB (1) add-on, %	1.44	1.21	1.07	0.79	1.21	0.93	0.88	1.21	0.93	1.25	1.07	1.11	1.07	1.30	1.16	1.21	1.25	1.16
PG, %	1.4	1.0	1.0	0.9	1.0	0.7	0.8	1.0	0.8	0.9	0.9	1.0	0.8	1.0	1.0	1.0	1.0	0.9
Glycerin, %	1.4	1.0	1.0	0.9	1.1	0.8	0.8	1.1	1.0	1.1	1.0	1.1	1.0	1.0	1.1	1.1	1.1	1.0

(1) Calculation of AB-add-on %: Sol NH_3 % (Delta) x 4.6424

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Table 3

SEMIWORKS PRE-TREATMENT - PRE-CUT CASING SOLUTION ANALYSIS

Pilot Plant Run

Solution Analysis	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306
Sol NH_3, %	2.96	2.87	2.92	3.07	2.86	2.89	3.08	3.00	2.86	3.06	2.88	2.99	3.07	2.94	3.14	2.86	2.71	3.05
PG, %	9.2	9.2	10.4	9.5	8.9	9.3	9.0	9.6	9.5	8.4	9.1	9.2	9.4	9.2	9.2	8.7	9.3	9.4
Glycerin, %	9.6	9.5	10.4	9.5	9.5	9.2	8.8	10.6	10.5	9.5	9.4	9.1	9.8	9.7	9.6	9.2	9.6	9.6
AB, % (calc)[1]	13.7	13.3	13.6	14.3	13.3	13.4	14.3	13.9	13.3	14.2	13.4	13.9	14.3	13.6	14.6	13.3	12.6	14.2

[1]) Calculation of AB: Sol NH_3 % x 4.6424

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Table 4

BERMUDA 100 PILOT PLANT PROCESSING DATA

Pre-Treatment of Filler Prior to Extraction

	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306
Analyses																		
Nicotine, %	3.09	3.20	3.07	3.13	3.09	3.06	3.13	3.10	3.13	3.08	3.02	3.17	3.16	3.13	3.12	3.22	2.90	2.86
AB, %																		
First App.	1.81	1.43	1.20	1.10	1.16	1.18	1.13	1.14	1.15	1.36	1.17	1.36	1.41	1.26	1.30	1.06	1.24	1.13
Total App.(1)	3.28	3.32	3.01	2.81	3.06	3.00	2.96	3.41	2.81	2.86	3.03	3.05	3.09	2.91	2.83	2.96	2.98	2.70

Note: **Total application results for all runs based on assumption of 0.14% NH_3 in tobacco strip. This differs from actual % NH_3 measured. (See Table 2)**

Tobacco Analyses																		
Filler OV, %	23.9	22.0	22.0	20.9	21.4	20.3	20.3	20.9	20.3	22.0	20.7	22.5	22.7	20.5	20.6	21.0	21.3	21.1
Post Cut Casing																		
OV, %	27.9	27.1	26.2	25.9	27.2	25.0	26.0	25.8	25.6	27.8	25.9	26.9	27.1	25.2	25.4	25.3	26.7	26.1
PG, %	2.5	2.2	2.0	2.1	2.4	2.0	2.1	2.1	2.0	2.1	1.9	2.1	2.1	1.9	2.0	2.1	2.3	2.4
Glycerin, %	2.5	2.2	2.0	2.1	2.4	2.0	1.9	2.1	2.2	2.3	2.0	2.0	2.2	2.0	2.0	2.1	2.5	2.3

(1) Total application represents cumulative result of first and second application. First application occurs in R&D Semiworks second application occurs at Bermuda 100 Pilot Plant. Sampling for analytical performed after first application and after second application.

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Table 5

BERMUDA 100 PILOT PLANT PROCESSING DATA

Stem Process Data
Pilot Plant Run

	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306
Feed Stems																		
OV, %	35.4	34.7	35.5	35.6	34.9	35.6	34.1	34.7	33.9	36.1	33.7	34.5	37.6	35.7	36.0	35.3	36.3	37.9
Nicotine, %	0.69	0.84	0.84	0.75	0.78	0.70	0.80	0.84	0.83	0.84	0.84	0.84	0.84	0.81	0.78	0.85	0.78	0.80
Monopotassium Citrate Add-on, %	12.46	12.11	12.91	12.74	12.61	13.70	12.84	12.40	12.05	12.19	11.34	11.58	13.09	11.80	12.36	12.83	13.77	12.28
Spent Stems																		
OV, %	35.2	35.5	36.0	36.0	35.7	36.3	36.2	35.2	35.2	36.8	35.5	35.5	38.1	35.9	36.5	36.2	36.6	35.8
Nicotine, %[1]	0.78	1.36	1.54	0.90	0.84	0.74	1.77	1.43	0.93	1.91	2.15	1.55	2.12	1.80	1.39	2.27	1.74	2.20
PG, %	2.9	1.6	1.3	1.4	1.0	1.0	1.0	1.0	0.9	0.8	1.1	0.6	1.1	0.8	1.1	1.2	1.1	1.0
Glycerin, %	0.2 0.3	0.2 0.2	0.2 <0.1	<0.1 0.2	0.2 0.2	0.2 0.3	<0.1 <0.1	0.2 <0.1	<0.1 <0.1	0.3 <0.1	0.3 0.2	0.2 <0.1	<0.1 <0.1	0.5 0.2	0.2 0.2	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1
Pet Ether Ext., %	<1.0 <1.0	<1.0 <1.0	<1.0 <1.0	<1.0 <1.0	<1.0 <1.0	<1.0 <1.0	<1.0 <1.0	<1.0 <1.0	<1.0 <1.0	<1.0 2.0	<1.0 <1.0	<1.0 <1.0	<1.0 <1.0	1.7 <1.0	<1.0 1.6	1.9 <1.0	<1.0 2.2	1.7 <1.0

[1]) Average of top basket only

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Table 6

DATA FOR POST EXTRACTION, DECLUMPING AND DRYING

Pilot Plant Run

	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306
Bermuda 100																		
OV, %	23.9	22.6	22.2	22.3	22.6	22.8	23.2	22.3	22.3	24.4	23.1	22.1	23.6	22.4	21.1	21.4	22.2	23.8
Nicotine, %	0.10	0.10	0.09	0.08	0.09	0.10	0.09	0.09	0.09	0.13	0.12	0.08	0.08	0.07	0.08	0.09	0.07	0.09
Nicotine Removed, %	96.6	96.8	96.9	97.4	96.9	96.8	97.3	97.2	97.2	95.8	96.1	97.4	97.5	97.7	97.4	97.2	97.5	97.0
PG, %	1.6	0.8	0.7	0.7	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.6	0.7	0.6	0.5	0.6	0.8	0.8
Glycerin, %	2.5	2.3	2.4	2.1	2.4	2.2	2.2	2.3	2.3	2.4	2.1	2.2	2.3	2.2	2.3	2.5	2.6	2.4

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Source: https://www.industrydocuments.ucsf.edu/docs/qhlm0000

Table 7

Expanded Tobacco Runs

ART Run #	OV (%) Feed	X-Tower	Prod	Eq. CV / Eq. OV (cc/g)	(%)
287	23.9	6.8	11.5	9.2	12.4
288 [1])	22.6	6.0	12.4	9.3	12.3
289	22.6	7.9	12.4	8.7	12.8
294	22.0	6.4	11.1	9.0	12.4
299 - Hauni	23.1	6.4	11.7	7.8	12.8
304 - Hauni	22.0	5.9	10.7	8.7	13.1

[1]) DL5 feedstock from Stockton Street; other DL feedstock from R&D Semiworks.

2023385022

Source: https://www.industrydocuments.ucsf.edu/docs/qhlm0000

Table 8

SEMIWORKS: INCOMING MATERIALS FOR PRIMARY

	M55		M57		M59		(1) M56/M60		(2) M56/M60		(3) M56/M60	
	292	293	297	298	295	296	290	291	302	303	305	306
Bermuda 100												
Filler Wt, lbs.	240	251	250	256	253	253	250	244	250	229	250	238
OV, %	22.32	22.55	21.78	23.82	22.75	22.05	22.95	23.10	23.15	22.85	22.96	23.24
Richmond												
Sol. NH_3, %	0.75	0.75	0.72	0.72	0.76	0.79	0.77	0.81	0.76	0.78	0.79	0.70
TRS, %	9.1	9.4	9.3	9.1	7.5	8.0	9.0	8.1	8.7	9.1	8.5	9.3
Glucose, %	3.1	3.3	3.0	3.3	3.3	3.4	3.2	3.0	3.3	3.2	2.9	3.2
Sucrose, %	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Fructose, %	4.2	4.7	4.7	4.9	4.2	4.4	4.4	4.2	4.9	4.6	4.1	4.6
Pet Ether Ext., %	3.9	3.8	4.1	3.5	4.2	3.5	3.4	3.5	3.6	3.4	---	3.7
Nicotine, %	0.11	0.11	0.11	0.15	0.10	0.10	0.11	0.11	0.10	0.10	0.09	0.09
Total Nitrogen, %	3.29	3.12	3.18	3.24	3.29	3.33	3.37	3.36	3.36	3.51	3.47	3.21
OV As Is, %	21.6	22.3	21.7	23.7	21.8	22.0	22.6	22.8	21.3	21.7	21.9	23.9
PG, %	0.5	0.6	0.8	0.7	0.6	0.6	0.8	0.8	0.6	0.6	0.8	0.8
Glycerin, %	2.0	2.0	2.4	1.8	2.2	2.2	2.3	2.1	2.3	2.3	2.2	2.1

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Source: https://www.industrydocuments.ucsf.edu/docs/qhlm0000

Table 9

IN-COMING MATERIALS - PRIMARY

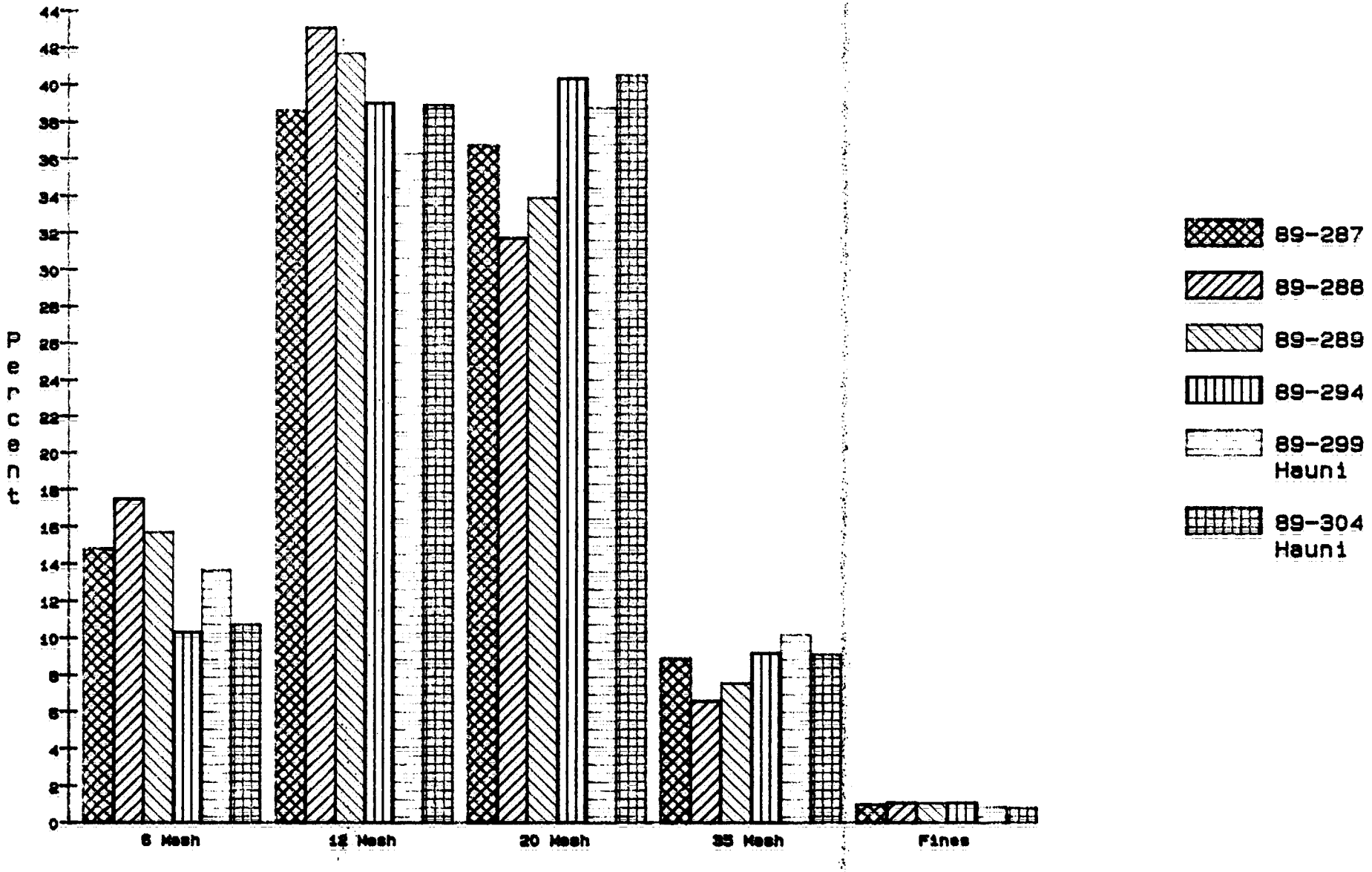
Expand Add-Back

	M55	M57	M59	(1) M56/M60	(2) M56/M60	(3) M56/M60
Sol. NH_3, %	0.53	0.52	0.54	0.55	0.46	0.46
TRS, %	9.0	8.7	9.2	9.1	8.2	7.7
Glucose, %	3.0	2.6	3.0	2.9	2.7	2.6
Sucrose, %	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Fructose, %	4.4	4.3	4.1	4.2	4.0	4.0
Pet Ether Ext., %	4.6	5.0	4.9	4.5	4.4	5.8
Nicotine, %	0.13	0.11	0.11	0.11	0.13	0.11
Total Nitrogen, %	3.21	3.37	3.35	3.21	3.20	3.32
OV As Is, %	11.7	11.4	11.1	11.2	11.7	10.9
PG, %	0.6	0.3	0.3	0.6	0.3	0.7
Glycerin, %	2.0	1.9	1.9	1.9	1.8	1.9

2023385024

Source: https://www.industrydocuments.ucsf.edu/docs/qhlm0000

FIGURE 2
Sieve Data - Expanded Tobacco



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Source: https://www.industrydocuments.ucsf.edu/docs/qhlm0000

Table 10

PRIMARY DATA - WET CASED FILLER

	M55	M57	M59	(1) M56/M60	(2) M56/M60	(3) M56/M60
Sol. NH_3, %	0.72	0.71	0.75	0.80	0.76	0.73
TRS, %	9.5	9.8	8.7	9.1	10.0	9.6
Glucose, %	3.6	3.7	3.4	3.6	3.7	3.6
Sucrose, %	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Fructose, %	4.9	5.2	4.1	4.7	4.9	5.0
OV As Is, %	29.3	30.0	29.4	28.6	29.3	28.9
PG, %	2.4	2.6	2.0	2.4	2.5	2.4
Glycerin, %	2.1	2.3	2.3	2.2	2.1	2.3

2023385026

Source: https://www.industrydocuments.ucsf.edu/docs/qhlm0000

Table 11

PRIMARY DATA - AFTER DRYER

	M55	M57	M59	(1) M56/M60	(2) M56/M60	(3) M56/M60
Sol. NH_3, %	0.67	-	0.72	0.75	0.69	0.70
TRS, %	10.2	-	9.3	9.8	10.1	9.9
Glucose, %	4.9	-	3.6	3.8	3.6	3.7
Sucrose, %	<1.0	-	<1.0	<1.0	<1.0	<1.0
Fructose, %	3.7	-	4.5	4.9	4.9	5.00
Pet Ether Ext. %	3.2	-	3.3	2.5	3.1	4.1
Nicotine, %	0.11	-	0.11	0.12	--	--
Total Nitrogen, %	3.25	-	3.23	3.25	3.18	3.23
OV As Is, %	13.0	13.2	13.8	13.5	13.2	12.9
PG, %	2.0	2.0	2.0	2.0	2.1	2.1
Glycerin, %	2.1	2.1	2.1	2.1	2.1	2.2

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Source: https://www.industrydocuments.ucsf.edu/docs/qhlm0000

Table 12

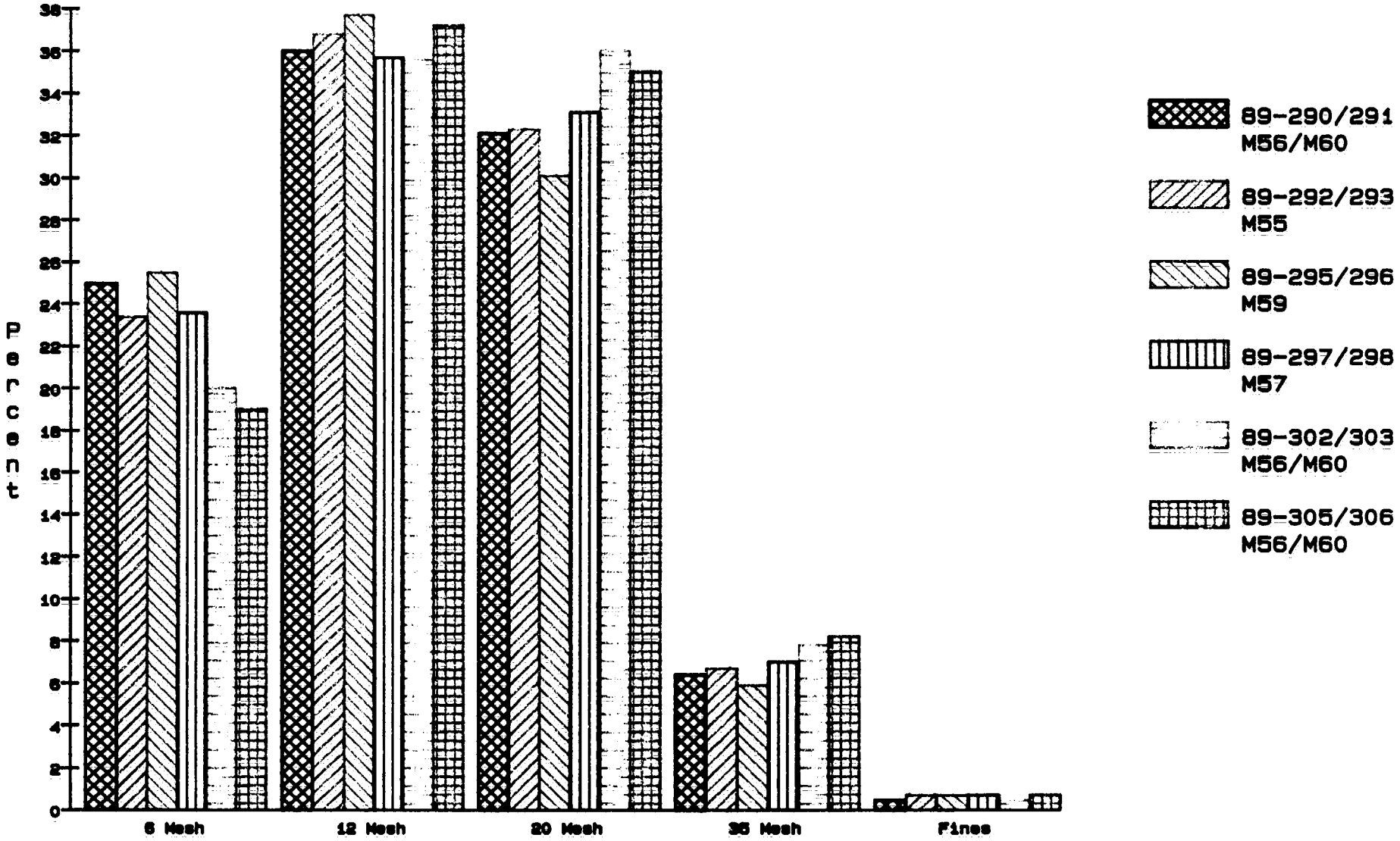
PRIMARY DATA - FILLER AFTER A/C

	M55	M57	M59	(1) M56/M60	(2) M56/M60	(3) M56/M60
Sol. NH_3, %	0.65	-	0.67	0.72	0.64	0.66
TRS, %	10.0	-	9.1	9.5	10.0	9.6
Glucose, %	5.0	-	3.6	3.8	3.5	3.6
Sucrose, %	<1.0	-	<1.0	<1.0	<1.0	<1.0
Fructose, %	3.6	-	4.6	5.0	4.8	4.9
OV As Is, %	13.1	13.3	12.8	13.0	13.2	13.1
PG, %	2.3	2.3	2.0	2.0	2.0	2.0
Glycerin, %	2.3	2.4	2.0	2.3	2.1	2.2
OV eq, %	13.1	13.8	13.1	12.9	-	13.3
CV eq, cc/g	6.1	4.9	6.3	6.2	-	6.0

2023385028

Source: https://www.industrydocuments.ucsf.edu/docs/qhlm0000

FIGURE 3
Sieve Data - Finished Filler
Exit Silo



2023850029

Source: https://www.industrydocuments.ucsf.edu/docs/qhlm0000

Cigarette Specification

Source: https://www.industrydocuments.ucsf.edu/docs/qhlm0000

PROJECT NAME: Ad Pack M57

CIGARETTE MANUFACTURING SPECIFICATION

CIGARETTE:

FTC Tar	4.0 - 0.5 + 0.4	mg/cigt
Tobacco Rod Length	57	mm
Filter Length	27	mm
Total Cigarette Length	84	mm
Tipping Paper Length	32	mm
Cigarette Paper Width	27.25	mm
Circumference	24.80	mm
Total RTD	107	mm H_2O
Ventilation	58 % ± 3	%
Filter RTD	135	mm H_2O

MOISTURE TARGET:

24 Hour Pack Moisture	13.2	%

TARGET WEIGHTS:

Rod Density at 13.2 % O.V.	0.216720	mg/cc
Tobacco weight at 13.2 % O.V.	0.6045989	g
Cigarette paper and Side seam	0.0399589	g
Rod weight at 13.2 % O.V.	0.6445578	g
Tipping paper and Adhesive	0.0393157	g
Filter plug (27 mm)	0.1958	g
Total Cigarette weight at 13.2 % O.V.	0.8796735	g
Total Less Plug	0.6838735	g
Cigarette 100 Weight	89.97	g

2023385031

Source: https://www.industrydocuments.ucsf.edu/docs/qhlm0000

PROJECT NAME: Ad Pack M57

CIGARETTE MANUFACTURING SPECIFICATION

NON-TOBACCO MATERIALS

CIGARETTE PAPER:

Vendor(s)/Grade Description	KC 611
PM Material Code	10-022-A

TIPPING PAPER:

Vendor(s)/Grade Description	KC WTA	
Width	64	mm
Perforation Method	laser	
Perforation Rows	2	
Perforation Band Width	2	mm
Distance between perforations	24	mm
Holes/inch/row	40	
Edge of band to edge of tipping	18	mm

SIDE SEAM ADHESIVE:

Vendor(s)/Grade Description	Fuller WB 3902-U
Raw Material Base	PVA
PM Material Code	61-444-A

TIPPING ADHESIVE:

Vendor(s)/Grade Description	National 32-1979
Raw Material Base	PVA
PM Material Code	61-216-A

2023385032

Source: https://www.industrydocuments.ucsf.edu/docs/qhlm0000

PROJECT NAME: Ad Pack M57

FILTER MANUFACTURING SPECIFICATION

FINISHED FILTER ROD DESCRIPTION

Machine Type	KDF-2	
Filter Rod Length	108	mm
Filter Circumference	24.45	mm
Number Up	4	
Plug Length	27.0	mm
Rod RTD	538	mm H_2O
Plug RTD	135	mm H_2O
Plasticizer	TA	
Application Percent	7.00	
Application Weight	5.11	grams/100 rods
PM Material Code	05-800-A	
Filter Tow	FT-222	
PM Material Code	05-222-E	
Plug Wrap	Dexter 9326	
PM Material Code	06-194-A	
Anchor Adhesive	Upaco 6732-O	
Number of Anchor Lines	1	
PM Material Code	61-425-A	
Lap Adhesive	Fuller HM 8229CH	
PM Material Code	61-428-A	
Dry Weight	72.97	gms/100 rods
Dry Weight with Glue	73.21	gms/100 rods
Wet Weight with Glue	78.32	gms/100 rods

2023385033

Source: https://www.industrydocuments.ucsf.edu/docs/qhlm0000

PROJECT NAME: Ad Pack M55 and M59

CIGARETTE MANUFACTURING SPECIFICATION

CIGARETTE:

FTC Tar	8.0	- 0.5 + 0.4 mg/cigt
Tobacco Rod Length	57	mm
Filter Length	27	mm
Total Cigarette Length	84	mm
Tipping Paper Length	32	mm
Cigarette Paper Width	27.25	mm
Circumference	24.80	mm
Total RTD	132	mm H_2O
Ventilation	30 %	± 3 %
Filter RTD	117	mm H_2O

MOISTURE TARGET:

24 Hour Pack Moisture	13.2	%

TARGET WEIGHTS:

Rod Density at 13.2 % O.V.	0.216720	mg/cc
Tobacco weight at 13.2 % O.V.	0.6045989	g
Cigarette paper and Side seam	0.0399589	g
Rod weight at 13.2 % O.V.	0.6445578	g
Tipping paper and Adhesive	0.0393157	g
Filter plug (27 mm)	0.1899	g
Total Cigarette weight at 13.2 % O.V.	0.8737735	g
Total Less Plug	0.6838735	g
Cigarette 100 Weight	87.38	g

2023385034

Source: https://www.industrydocuments.ucsf.edu/docs/qhlm0000

PROJECT NAME: Ad Pack M55 and M59

CIGARETTE MANUFACTURING SPECIFICATION

NON-TOBACCO MATERIALS

CIGARETTE PAPER:

Vendor(s)/Grade Description	KC 611
PM Material Code	10-022-A

TIPPING PAPER:

Vendor(s)/Grade Description	KC WTA	
Width	64	mm
Perforation Method	laser	
Perforation Rows	2	
Perforation Band Width	2	mm
Distance between perforations	24	mm
Holes/inch/row	40	
Edge of band to edge of tipping	18	mm

SIDE SEAM ADHESIVE:

Vendor(s)/Grade Description	Fuller WB 3902-U
Raw Material Base	PVA
PM Material Code	61-444-A

TIPPING ADHESIVE:

Vendor(s)/Grade Description	National 32-1979
Raw Material Base	PVA
PM Material Code	61-216-A

2023385035

Source: https://www.industrydocuments.ucsf.edu/docs/qhlm0000

PROJECT NAME: Ad Pack M55 and M59

FILTER MANUFACTURING SPECIFICATION

FINISHED FILTER ROD DESCRIPTION

Machine Type	KDF-2	
Filter Rod Length	108	mm
Filter Circumference	24.45	mm
Number Up	4	
Plug Length	27.0	mm
Rod RTD	467	mm H_20
Plug RTD	117	mm H_20
Plasticizer	TA	
Application Percent	7.00	
Application Weight	4.95	grams/100 rods
PM Material Code	05-800-A	
Filter Tow	FT-222	
PM Material Code	05-222-E	
Plug Wrap	KC 45M1	
PM Material Code	06-251-A	
Anchor Adhesive	Upaco 6732-O	
Number of Anchor Lines	1	
PM Material Code	61-425-A	
Lap Adhesive	Fuller HM 8229CH	
PM Material Code	61-428-A	
Dry Weight	70.77	gms/100 rods
Dry Weight with Glue	71.01	gms/100 rods
Wet Weight with Glue	75.96	gms/100 rods

2023350036

Source: https://www.industrydocuments.ucsf.edu/docs/qhlm0000

PROJECT NAME: Ad Pack M56 and M60

CIGARETTE MANUFACTURING SPECIFICATION

CIGARETTE:

FTC Tar	8.0 - 0.5 + 0.4	mg/cigt
Tobacco Rod Length	57	mm
Filter Length	27	mm
Total Cigarette Length	84	mm
Tipping Paper Length	32	mm
Cigarette Paper Width	27.25	mm
Circumference	24.80	mm
Total RTD	132	mm H_2O
Ventilation	30 % ± 3	%
Filter RTD	117	mm H_2O

MOISTURE TARGET:

24 Hour Pack Moisture	13.2	%

TARGET WEIGHTS:

Rod Density at 13.2 % O.V.	0.216720	mg/cc
Tobacco weight at 13.2 % O.V.	0.6045989	g
Cigarette paper and Side seam	0.0399589	g
Rod weight at 13.2 % O.V.	0.6445578	g
Tipping paper and Adhesive	0.0393157	g
Filter plug (27 mm)	0.1908	g
Total Cigarette weight at 13.2 % O.V.	0.8746735	g
Total Less Plug	0.6838735	g
Cigarette 100 Weight	87.47	g

2023385037

Source: https://www.industrydocuments.ucsf.edu/docs/qhlm0000

PROJECT NAME: Ad Pack M56 and M60

CIGARETTE MANUFACTURING SPECIFICATION

NON-TOBACCO MATERIALS

CIGARETTE PAPER:

Vendor(s)/Grade Description	KC 611
PM Material Code	10-022-A

TIPPING PAPER:

Vendor(s)/Grade Description	KC WTA	
Width	64	mm
Perforation Method	laser	
Perforation Rows	2	
Perforation Band Width	2	mm
Distance between perforations	24	mm
Holes/inch/row	40	
Edge of band to edge of tipping	18	mm

SIDE SEAM ADHESIVE:

Vendor(s)/Grade Description	Fuller WB 3902-U
Raw Material Base	PVA
PM Material Code	61-444-A

TIPPING ADHESIVE:

Vendor(s)/Grade Description	National 32-1979
Raw Material Base	PVA
PM Material Code	61-216-A

Mentholated foil supplied by Operation Services; reference base foil 15-160-A (30#) mentholated to 80 mg/pack.

2023385038

Source: https://www.industrydocuments.ucsf.edu/docs/qhlm0000

PROJECT NAME: Ad Pack M56 and M60

FILTER MANUFACTURING SPECIFICATION

FINISHED FILTER ROD DESCRIPTION

Machine Type	KDF-2	
Filter Rod Length	108	mm
Filter Circumference	24.45	mm
Number Up	4	
Plug Length	27.0	mm
Rod RTD	467	mm H_2O
Plug RTD	117	mm H_2O
Plasticizer	ML 37	
Application Percent	7.5	
Application Weight	5.31	grams/100 rods
PM Material Code	05-864-A	
Filter Tow	FT-222	
PM Material Code	05-222-E	
Plug Wrap	KC 45M1	
PM Material Code	06-251-A	
Anchor Adhesive	Upaco 6732-O	
Number of Anchor Lines	1	
PM Material Code	61-425-A	
Lap Adhesive	Fuller HM 8229CH	
PM Material Code	61-428-A	
Dry Weight	70.77	gms/100 rods
Dry Weight with Glue	71.01	gms/100 rods
Wet Weight with Glue	76.32	gms/100 rods

2023355039

Source: https://www.industrydocuments.ucsf.edu/docs/qhlm0000

PROJECT NAME: Ad Pack M58

CIGARETTE MANUFACTURING SPECIFICATION

CIGARETTE:

FTC Tar	8.0 - 0.4 + 0.5	mg/cigt
Tobacco Rod Length	57.0	mm
Filter Length	27.0	mm
Total Cigarette Length	84.0	mm
Tipping Paper Length	32	mm
Cigarette Paper Width	27.25	mm
Circumference	24.80	mm
Total RTD	132.08	mm H_2O
Ventilation	30 % ± 5	%
Filter RTD	116.84	mm H_2O

MOISTURE TARGET:

24 Hour Pack Moisture	13.25	%

TARGET WEIGHTS:

Rod Density at 13.25% O.V.	0.247353	mg/cc
Tobacco weight at 13.25% O.V.	0.6900579	g
Cigarette paper and Side seam	0.0399589	g
Rod weight at 13.25% O.V.	0.7300168	g
Tipping paper and Adhesive	0.0393157	g
Filter plug (27.0mm)	0.1917	g
Total Cigarette weight at 13.2 % O.V.	0.9610325	g
Total Less Plug	0.7693325	g
Cigarette 100 Weight	96.10	g

2023355040

Source: https://www.industrydocuments.ucsf.edu/docs/qhlm0000

PROJECT NAME: Ad Pack M58

CIGARETTE MANUFACTURING SPECIFICATION

NON-TOBACCO MATERIALS

CIGARETTE PAPER:

Vendor(s)/Grade Description	KC 611
PM Material Code	10-022-A

TIPPING PAPER:

Vendor(s)/Grade Description	KC WTA	
Width	64	mm
Perforation Method	laser	
Perforation Rows	2	
Perforation Band Width	2	mm
Distance between perforations	24	mm
Holes/inch/row	40	
Edge of band to edge of tipping	18	mm

SIDE SEAM ADHESIVE:

Vendor(s)/Grade Description	Fuller WB 3902-U
Raw Material Base	PVA
PM Material Code	61-444-A

TIPPING ADHESIVE:

Vendor(s)/Grade Description	National 32-1979
Raw Material Base	PVA
PM Material Code	61-216-A

2023385041

Source: https://www.industrydocuments.ucsf.edu/docs/qhlm0000

PROJECT NAME: Ad Pack M58

FILTER MANUFACTURING SPECIFICATION

FINISHED FILTER ROD DESCRIPTION

Machine Type	KDF-2	
Filter Rod Length	108	mm
Filter Circumference	24.45	mm
Number Up	4	
Plug Length	27.0	mm
Rod RTD	467.36	mm H_2O
Plug RTD	116.84	mm H_2O
Plasticizer	TA	
Application Percent	8.00	
Application Weight	5.66	grams/100 rods
PM Material Code	05-800-A	
Filter Tow	FT-222	
PM Material Code	05-222-E	
Plug Wrap	KC 45M1	
PM Material Code	06-251-A	
Anchor Adhesive	Upaco 6732-O	
Number of Anchor Lines	1	
PM Material Code	61-425-A	
Lap Adhesive	Fuller HM 8229CH	
PM Material Code	61-428-A	
Dry Weight	70.77	gms/100 rods
Dry Weight with Glue	71.01	gms/100 rods
Wet Weight with Glue	76.67	gms/100 rods

2023355042

Source: https://www.industrydocuments.ucsf.edu/docs/qhlm0000

Table 13

Packaging Materials

Type	Description	PM Material Code	AD/PACK
Teartape	-1/16" PRTD Gold Poly TT	47-152-B	M55,58,59
Teartape	-1/16" PRTD Silver Poly TT	47-151-B	M56,60
Teartape	-1/16" Clear Poly TT	47-181-A	M57
Foil	-114mm Gold Stripe 30#	15-565-A	M55,58,59
*Foil	-114mm 30# Silver Foil	15-160-A	M56,57,60
Closure	-Merit Free Reg AMF 20 Cut Clos	40-841-A	M55,58
Closure	-Merit Free Men AMF 20 Cut Clos	40-842-A	M56
Closure	-Merit Free UL Reg AMF 20 Cut Clos	40-843-A	M57
Closure	-Misc Next Reg AMF 20 Cut Clos	40-844-A	M59
Closure	-Misc Next Men AMF 20 Cut Clos	40-845-A	M60
Label	-Merit Free Reg KSSP WN2Q1 AMF Cut	2L-841-A	M55,58
Label	-Merit Free Men KSSP WN2Q1 AMF Cut	2L-842-A	M56
Label	-Merit Free UL Reg KSSP WN2Q1 AMF Cut	2L-843-A	M57
Label	-Misc Next Reg KSSP WN4Q1 AMF Cut	4L-844-A	M59
Label	-Misc Next Men KSSP WN4Q1 AMF Cut	4L-845-A	M60
Carton	-Plain White 20/200 CTN	*B-840-A	All Ad/Packs

* Base Foil 15-160-A will be mentholated for Ad/Packs M56 & M60 in Louisville and shipped to Richmond.

2023385043

Source: https://www.industrydocuments.ucsf.edu/docs/qhlm0000

Cigarette Analytical

Source: https://www.industrydocuments.ucsf.edu/docs/qhlm0000

Table 14

Ad Pack M55

Art Lights (8mg) 85mm SP - Regular

CIGARETTE ANALYSIS DATA

SMOKE:

Butt Length	35	mm
FTC Tar	7.8	mg/cigt.
TPM	8.5	mg/cigt.
Nicotine	0.07	mg/cigt.
Water	0.61	mg/cigt.
Puffs/cigt.	6.7	
Filtration Efficiency	61	%
Filter RTD	115	mm H_2O
Static Burn Time	6.8	min.
Total RTD	125	mm H_2O
Ventilation	30	%
Firmness at 13.1% O.V. (24 hr. pack)	3.1	mm
Cylinder volume (Borgwaldt @ 14.2% O.V.)	5.1	cc/gram
Tobacco Weight @ Eq. O.V.	0.603	g/cigt.

FILLER:

Total Reducing Sugars	8.5	% DWB
Glucose	2.9	% DWB
Fructose	4.5	% DWB
Sucrose	< 1.0	% DWB
Propylene Glycol	2.0	% DWB
Glycerine	2.3	% DWB
Soluble Ammonia	0.65	% DWB
Nitrate Nitrogen	0.12	% DWB
Nicotine	0.12	% DWB
Expanded Tobacco	23	%

Sieves (Ripped Cigarettes):

6 Mesh	2.2	%
12 Mesh	33.8	%
20 Mesh	50.1	%
35 Mesh	12.5	%
Fines	1.3	%

2023385045

Source: https://www.industrydocuments.ucsf.edu/docs/qhlm0000

Table 15

Ad Pack M56

Art Lights (8mg) 85mm SP - Menthol

CIGARETTE ANALYSIS DATA

SMOKE:	GG-2	GG-1	GG	
Butt Length	35	35	35	mm
FTC Tar	7.6	8.2	8.2	mg/cigt.
TPM	8.4	8.9	8.9	mg/cigt.
Nicotine	0.07	0.07	0.08	mg/cigt.
Water	0.72	0.66	0.61	mg/cigt.
Puffs/cigt.	7.3	7.1	7.3	
Filtration Efficiency	59	60	61	%
Filter RTD	114	116	114	mm H_2O
Static Burn Time	6.7	7.5	7.3	min.
Total RTD	124	121	128	mm H_2O
Ventilation	32	31	27	%
Firmness (24 hr. pack O.V.)	3.2	3.5	3.0	mm
Pack O.V.	13.4	13.5	12.9	%
Cylinder volume (Borgwaldt @ Eq. O.V.)	5.2	5.0	5.3	cc/gram
Eq. O.V.	14.4	14.4	13.8	%
Tobacco Weight @ Eq. O.V.	0.600	0.602	0.601	g/cigt.

FILLER:				
Total Reducing Sugars	8.7	9.4	10.0	% DWB
Glucose	3.1	3.6	3.4	% DWB
Fructose	4.6	5.0	4.1	% DWB
Sucrose	<1.0	<1.0	<1.0	% DWB
Propylene Glycol	1.8	1.6	1.6	% DWB
Glycerine	2.2	1.9	2.2	% DWB
Solubla Ammonia	0.60	0.64	0.68	% DWB
Nitrate Nitrogen	0.13	0.13	0.13	% DWB
Nicotine	0.12	0.11	0.12	% DWB
Expanded Tobacco	21	20	21	%

Sieves (Ripped Cigarettes):				
6 Mesh	1.3	2.1	1.8	%
12 Mesh	25.2	34.0	31.7	%
20 Mesh	53.3	46.8	48.0	%
35 Mesh	18.5	16.0	16.7	%
Fines	1.7	1.1	1.6	%

Menthol:				
Total Pack	85.0	90.0	89.0	mg
14 Day Aged				
· Smoke	0.49	0.46	0.66	mg/cigt.
· Filler	2.5	2.3	2.6	mg/cigt.
· Filter	2.0	2.1	1.8	mg/cigt.

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Source: https://www.industrydocuments.ucsf.edu/docs/qhlm0000

Table 16

Ad Pack M57

Art Ultra Lights (4mg) 85mm SP - Regular

CIGARETTE ANALYSIS DATA

SMOKE:

Butt Length	35	mm
FTC Tar	4.5	mg/cigt.
TPM	4.8	mg/cigt.
Nicotine	0.04	mg/cigt.
Water	0.31	mg/cigt.
Puffs/cigt.	8.2	
Filtration Efficiency	63	%
Filter RTD	132	mm H_2O
Static Burn Time	7.4	min.
Total RTD	106	mm H_2O
Ventilation	59	%
Firmness at 13.0% O.V. (24 hr. pack)	3.0	mm
Cylinder volume (Borgwaldt @ 14.2% O.V.)	5.3	cc/gram
Tobacco Weight @ Eq. O.V.	0.604	g/cigt.

FILLER:

Total Reducing Sugars	10.0	% DWB
Glucose	3.5	% DWB
Fructose	5.2	% DWB
Sucrose	< 1.0	% DWB
Propylene Glycol	2.0	% DWB
Glycerine	2.3	% DWB
Soluble Ammonia	0.65	% DWB
Nitrate Nitrogen	0.13	% DWB
Nicotine	0.13	% DWB
Expanded Tobacco	24	%

Sieves (Ripped Cigarettes):

6 Mesh	2.5	%
12 Mesh	34.9	%
20 Mesh	46.2	%
35 Mesh	15.2	%
Fines	1.2	%

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Source: https://www.industrydocuments.ucsf.edu/docs/qhlm0000

Table 17

Ad Pack M58

Merit 85mm SP - Regular

CIGARETTE ANALYSIS DATA

SMOKE:

Butt Length	35	mm
FTC Tar	8.3	mg/cigt.
TPM	9.7	mg/cigt.
Nicotine	0.62	mg/cigt.
Water	0.81	mg/cigt.
Puffs/cigt.	7.2	
Filtration Efficiency	61	%
Filter RTD	116	mm H_2O
Static Burn Time	6.8	min.
Total RTD	127	mm H_2O
Ventilation	30	%
Firmness at (24 hr. pack O.V.)	3.0	mm
Pack O.V.	13.4	%
Cylinder volume (Borgwaldt @ Eq. O.V.)	4.7	cc/gram
Eq. O.V.	14.1	%
Tobacco Weight @ Eq. O.V.	0.685	g/cigt.

FILLER:

Total Reducing Sugars	8.2	% DWB
Glucose	3.0	% DWB
Fructose	4.0	% DWB
Sucrose	2.7	% DWB
Propylene Glycol	2.1	% DWB
Glycerine	2.6	% DWB
Soluble Ammonia	0.41	% DWB
Nitrate Nitrogen	0.27	% DWB
Nicotine	2.5	% DWB
Expanded Tobacco	12	%

Sieves (Ripped Cigarettes):

6 Mesh	1.9	%
12 Mesh	29.1	%
20 Mesh	50.3	%
35 Mesh	17.1	%
Fines	1.6	%

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Source: https://www.industrydocuments.ucsf.edu/docs/qhlm0000

Table 18

Ad Pack M59

Art Lights (8mg) 85mm SP - Regular

CIGARETTE ANALYSIS DATA

SMOKE:

Butt Length	35	mm
FTC Tar	7.7	mg/cigt.
TPM	8.5	mg/cigt.
Nicotine	0.07	mg/cigt.
Water	0.69	mg/cigt.
Puffs/cigt.	7.4	
Filtration Efficiency	60	%
Filter RTD	118	mm H_2O
Static Burn Time	7.2	min.
Total RTD	132	mm H_2O
Ventilation	28	%
Firmness at 12.8% O.V. (24 hr. pack)	3.1	mm
Cylinder volume (Borgwaldt @ 14.3% O.V.)	5.2	cc/gram
Tobacco Weight @ Eq. O.V.	0.609	g/cigt.

FILLER:

Total Reducing Sugars	9.6	% DWB
Glucose	3.2	% DWB
Fructose	4.7	% DWB
Sucrose	< 1.0	% DWB
Propylene Glycol	2.0	% DWB
Glycerine	2.3	% DWB
Soluble Ammonia	0.67	% DWB
Nitrate Nitrogen	0.14	% DWB
Nicotine	0.12	% DWB
Expanded Tobacco	22	%

Sieves (Ripped Cigarettes):

6 Mesh	2.1	%
12 Mesh	33.6	%
20 Mesh	46.9	%
35 Mesh	15.9	%
Fines	1.4	%

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Source: https://www.industrydocuments.ucsf.edu/docs/qhlm0000

Table 19

Ad Pack M60

Art Lights (8mg) 85mm SP - Menthol

CIGARETTE ANALYSIS DATA

SMOKE:	GJ-2	GJ-1	GJ	
Butt Length	35	35	35	mm
FTC Tar	7.8	8.3	8.3	mg/cigt.
TPM	8.6	9.0	9.1	mg/cigt.
Nicotine	0.07	0.07	0.08	mg/cigt.
Water	0.75	0.67	0.72	mg/cigt.
Puffs/cigt.	7.3	7.4	7.4	
Filtration Efficiency	59	60	62	%
Filter RTD	114	118	117	mm H_2O
Static Burn Time	6.8	7.4	7.5	min.
Total RTD	124	124	134	mm H_2O
Ventilation	33	31	27	%
Firmness (24 hr. pack O.V.)	3.3	3.5	3.3	mm
Pack O.V.	13.6	13.5	13.2	%
Cylinder volume (Borgwaldt @ Eq. O.V.)	5.1	5.0	5.3	cc/gram
Eq. O.V.	14.6	14.5	14.0	%
Tobacco Weight @ Eq. O.V.	0.600	0.600	0.607	g/cigt.

FILLER:				
Total Reducing Sugars	9.1	9.3	10.1	% DWB
Glucose	3.0	3.1	3.6	% DWB
Fructose	4.6	4.4	4.4	% DWB
Sucrose	<1.0	<1.0	<1.0	% DWB
Propylene Glycol	1.8	1.6	1.7	% DWB
Glycerine	2.2	1.9	2.3	% DWB
Solubla Ammonia	0.61	0.65	0.67	% DWB
Nitrate Nitrogen	0.12	0.12	0.13	% DWB
Nicotine	0.12	0.11	0.12	% DWB
Expanded Tobacco	20	21	20	%

Sieves (Ripped Cigarettes):				
6 Mesh	1.3	1.8	2.0	%
12 Mesh	29.0	33.0	33.1	%
20 Mesh	49.9	47.7	47.3	%
35 Mesh	18.1	16.4	16.0	%
Fines	1.7	1.1	1.5	%

Menthol:				
Total Pack	89.5	91.0	87.5	mg
14 Day Aged				
· Smoke	0.47	0.48	0.64	mg/cigt.
· Filler	2.5	2.3	2.5	mg/cigt.
· Filter	1.9	2.1	1.8	mg/cigt.

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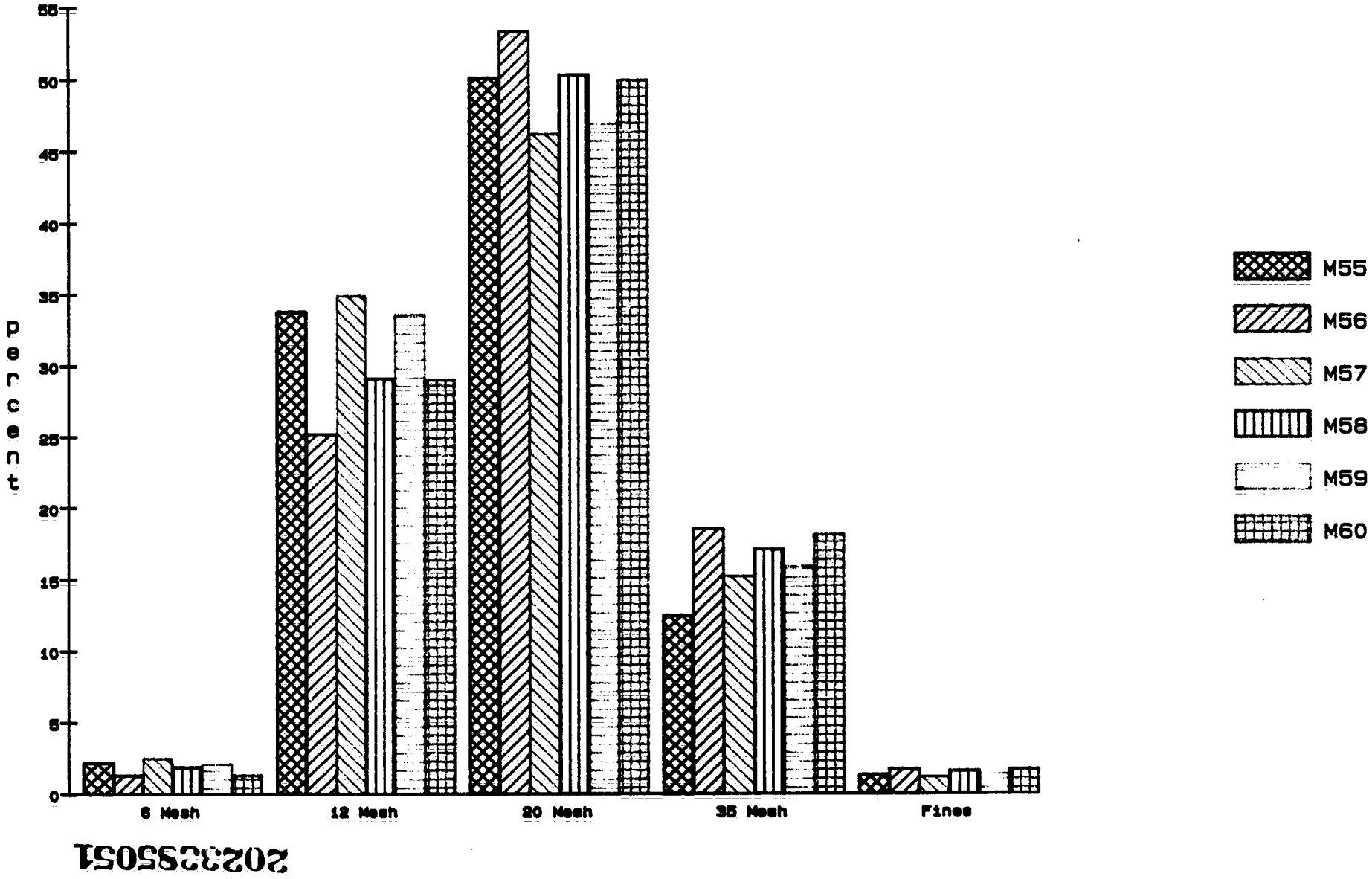
Source: https://www.industrydocuments.ucsf.edu/docs/qhlm0000

FIGURE 4
Sieve Data - Ripped Cigarettes
Ad Packs M55 thru M60



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Source: https://www.industrydocuments.ucsf.edu/docs/qhlm0000

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Appendix

Source: https://www.industrydocuments.ucsf.edu/docs/qhlm0000

PHILIP MORRIS U.S.A. INTER-OFFICE CORRESPONDENCE

120 PARK AVENUE, NEW YORK, N.Y. 10017

TO: Earl Herald DATE: January 5, 1989

FROM: Jerry Isaacs

SUBJECT: Request for Production of Consumer Test Cigarettes

Attached is the paper work for Project Art - Identified Merit Free and Next 85mm ad/pack tests. The individual components for these tests are summarized below.

Test Number	Test
M55	Merit Free 85mm Non-Menthol Flavor Low
M56	Merit Free 85mm Menthol Flavor Low
M57	Merit Free 85mm Non-Menthol Ultra Lights
M58	Merit Free 85mm (Control) Non-Menthol
M59	Next 85mm Non-Menthol Flavor Low
M60	Next 85mm Menthol Flavor Low

Please advise Karen Eisen or me when we can expect delivery.

cc: C. Bates
K. Eisen
C. Levy
K. Miller
B. Schuyler
J. Scully
L. Suwarna
J. Whitman
J. Zoler

2023385053

Source: https://www.industrydocuments.ucsf.edu/docs/qhlm0000

PHILIP MORRIS U.S.A. INTER-OFFICE CORRESPONDENCE
120 Park Avenue, New York, NY 10017

TO: Mr. R. P. Heretick DATE: January 10, 1989

FROM: E. N. Herald

SUBJECT: PROJECT ART AD/PACK REQUEST (M55 - M60)

Attached is the Marketing Research request for the Project ART ad/packs. Packaging materials are scheduled to be available January 24, 1989.

Please note that there are six different test cells identified as M55 through M60. Test number M58 is a control product (Merit blend cigarette with white tipping) and will be packaged in the same package as test product M55. It is important that the control product be clearly identified with a small red dot in the center of one side of the pack prior to overwrapping.

Please notify me at New York extension 3682 regarding the schedule for fulfilling this request.

Thank you.

Attachment

cc: C. Arterbery
C. Bates
J. Bickett
D. Birdsong
E. Gee
W. Houck
J. Isaacs
J. Jones
B. Latshaw
C. Levy
J. Myracle
D. Newman
C. Rowe
M. Suter
J. Warren
J. Whitman
E. Wickham

2023385054

10 '89 15:46 P.MORRIS CREDIT P.2

Source: https://www.industrydocuments.ucsf.edu/docs/qhlm0000

PHILIP MORRIS U.S.A. INTER-OFFICE CORRESPONDENCE

120 PARK AVENUE, NEW YORK, N.Y 10017

TO: Mr. E. Herald DATE: January 4, 1989

FROM: Jerry Isaacs

SUBJECT: Request for Production of Consumer Test Cigarettes

Purpose: Project Art: Identified Merit Free 85mm Non-Menthol ad/pack test.

Cigarettes:

Blend Code	M55
Cigarette Name	Merit Free
Blend	Experimental-Art Flavor Low Non-Menthol
Tipping ~~Filter~~ Color	White
Tipping Appearance	Two gold rings
Paper	Unmarked

Packages: Identified Merit Free 85mm Non-Menthol

Carton: Plain White

Quantities: Blend Code M55
Total 187 cartons

Time Schedule: We would like these cigarettes made as soon as feasible and shipped to Marketing Information Systems Inc. Please send 1 carton to Mr. C. Rowe as soon as product has been manufactured.

Shipping Instructions:

180 cartons to Marketing Information Systems Inc.
100 Sylvan Avenue
Englewood Cliffs, NJ 07632
Attention: Zack Apkarian

2 cartons to C. Bates - NYO
2 cartons to J. Isaacs - NYO
2 cartons to J. Warren - Richmond

Total 187

Product Designation: M55 Account No. 043-120-910-24

cc: C. Bates
K. Eisen
C. Levy
K. Miller
B. Schuyler
J. Scully
L. Suwarna
J. Whitman
J. Zoler

2023385055

Source: https://www.industrydocuments.ucsf.edu/docs/qhlm0000

PHILIP MORRIS U.S.A. — **INTER-OFFICE CORRESPONDENCE**

120 PARK AVENUE, NEW YORK, N.Y. 10017

TO: Mr. E. Herald

DATE: January 4, 1989

FROM: Jerry Isaacs

SUBJECT: Request for Production of Consumer Test Cigarettes

Purpose: Project Art: Identified Merit Free 85mm Menthol ad/pack test.

Cigarettes:

Blend Code	M56
Cigarette Name	Merit Free (Menthol)
Blend	Experimental-Art Flavor Low Menthol
~~Filter~~ Tipping Color	White
Tipping Appearance	Two green rings
Paper	Unmarked

Packages: Identified Merit Free 85mm Menthol

Carton: Plain White

Quantities: Blend Code M56
Total 127 cartons

Time Schedule: We would like these cigarettes made as soon as feasible and shipped to Marketing Information Systems Inc. Please send 1 carton to Mr. C. Rowe as soon as product has been manufactured.

Shipping Instructions: 120 cartons to Marketing Information Systems Inc.
100 Sylvan Avenue
Englewood Cliffs, NJ 07632
Attention: Zack Apkarian
2 cartons to C. Bates - NYO
2 cartons to J. Isaacs - NYO
2 cartons to J. Warren - Richmond
Total 127

Product Designation: M56 Account No. 043-120-910-24

cc: C. Bates
K. Eisen
C. Levy
K. Miller
B. Schuyler
J. Scully
L. Suwarna
J. Whitman
J. Zoler

2023385056

Source: https://www.industrydocuments.ucsf.edu/docs/qhlm0000

PHILIP MORRIS U.S.A. INTER-OFFICE CORRESPONDENCE

120 PARK AVENUE, NEW YORK, N.Y 10017

TO: Mr. E. Herald DATE: January 4, 1989

FROM: Jerry Isaacs

SUBJECT: Request for Production of Consumer Test Cigarettes

Purpose: Project Art: Identified Merit Free 85mm Non-Menthol ad/pack test.

Cigarettes:

Blend Code	M57
Cigarette Name	Merit Free
Blend	Experimental-Art Ultra Lights Non-Menthol
Tipping ~~Filter~~ Color	White
Tipping Appearance	Two gold rings
Paper	Unmarked

Packages: Identified Merit Free Ultra Lights 85mm Non-Menthol

Carton: Plain White

Quantities: Blend Code M57
Total 127 cartons

Time Schedule: We would like these cigarettes made as soon as feasible and shipped to Marketing Information Systems Inc. Please send 1 carton to Mr. C. Rowe as soon as product has been manufactured.

Shipping Instructions: 120 cartons to Marketing Information Systems Inc.
100 Sylvan Avenue
Englewood Cliffs, NJ 07632
Attention: Zack Apkarian

2 cartons to C. Bates - NYO
2 cartons to J. Isaacs - NYO
2 cartons to J. Warren - Richmond

Total 127

Product Designation: M57 Account No. 043-120-910-24

cc: C. Bates
K. Eisen
C. Levy
K. Miller
B. Schuyler
J. Scully
L. Suwarna
J. Whitman
J. Zoler

2023385057

Source: https://www.industrydocuments.ucsf.edu/docs/qhlm0000

PHILIP MORRIS U.S.A. INTER-OFFICE CORRESPONDENCE

120 PARK AVENUE, NEW YORK, N.Y 10017

TO: Mr. E. Herald DATE: January 4, 1989

FROM: Jerry Isaacs

SUBJECT: Request for Production of Consumer Test Cigarettes

Purpose: Project Art: Identified Merit Free 85mm Non-Menthol ad/pack test.

Cigarettes:

Blend Code	M58
Cigarette Name	Merit Free
Blend	Control - Merit Non-Menthol
Filter Color	White
Tipping ~~Tipping~~ Appearance	Two gold rings
Color Identifier	Small red circle on back of pack-center
Paper	Unmarked

Packages: Identified Merit Free 85mm Non-Menthol

Carton: Plain White

Quantities: Blend Code M58
Total 127 cartons

Time Schedule: We would like these cigarettes made as soon as feasible and shipped to Marketing Information Systems Inc. Please send 1 carton to Mr. C. Rowe as soon as product has been manufactured.

Shipping Instructions: 120 cartons to Marketing Information Systems Inc.
100 Sylvan Avenue
Englewood Cliffs, NJ 07632
Attention: Zack Apkarian
2 cartons to C. Bates - NYO
2 cartons to J. Isaacs - NYO
2 cartons to J. Warren - Richmond
Total 127

Product Designation: M58 Account No. 043-120-910-24

cc: C. Bates
K. Eisen
C. Levy
K. Miller
B. Schuyler
J. Scully
L. Suwarna
J. Whitman
J. Zoler

2023385058

Source: https://www.industrydocuments.ucsf.edu/docs/qhlm0000

PHILIP MORRIS U.S.A. INTER-OFFICE CORRESPONDENCE

120 PARK AVENUE, NEW YORK, N.Y 10017

TO: Mr. E. Herald DATE: January 4, 1989

FROM: Jerry Isaacs

SUBJECT: Request for Production of Consumer Test Cigarettes

Purpose: Project Art: Identified Next 85mm Non-Menthol ad/pack test.

Cigarettes:

Blend Code	M59
Cigarette Name	Next
Blend	Experimental-Art Flavor Low Non-Menthol
~~Filter~~ Tipping Color	White
Tipping Appearance	Two gold rings
Paper	Unmarked

Packages: Identified Next 85mm Non-Menthol

Carton: Plain White

Quantities: Blend Code M59
Total 187 cartons

Time Schedule: We would like these cigarettes made as soon as feasible and shipped to Marketing Information Systems Inc. Please send 1 carton to Mr. C. Rowe as soon as product has been manufactured.

Shipping Instructions:

180 cartons to Marketing Information Systems Inc.
100 Sylvan Avenue
Englewood Cliffs, NJ 07632
Attention: Zack Apkarian
2 cartons to C. Bates - NYO
2 cartons to J. Isaacs - NYO
2 cartons to J. Warren - Richmond

Total 187

Product Designation: M59 Account No. 043-120-910-24

cc: C. Bates
K. Eisen
C. Levy
K. Miller
B. Schuyler
J. Scully
L. Suwarna
J. Whitman
J. Zoler

2023385059

Source: https://www.industrydocuments.ucsf.edu/docs/qhlm0000

PHILIP MORRIS U.S.A. — **INTER-OFFICE CORRESPONDENCE**

120 PARK AVENUE, NEW YORK, N.Y 10017

TO: Mr. E. Herald — DATE: January 4, 1989

FROM: Jerry Isaacs

SUBJECT: Request for Production of Consumer Test Cigarettes

Purpose: Project Art: Identified Next 85mm Menthol ad/pack test.

Cigarettes:

Blend Code	M60
Cigarette Name	Next (Menthol)
Blend	Experimental-Art Flavor Low Menthol
~~Filter~~ Tipping Color	White
Tipping Appearance	Two green rings
Paper	Unmarked

Packages: Identified Next 85mm Menthol

Carton: Plain White

Quantities: Blend Code M60
Total 127 cartons

Time Schedule: We would like these cigarettes made as soon as feasible and shipped to Marketing Information Systems Inc. Please send 1 carton to Mr. C. Rowe as soon as product has been manufactured.

Shipping Instructions:

120 cartons to	Marketing Information Systems Inc. 100 Sylvan Avenue Englewood Cliffs, NJ 07632 Attention: Zack Apkarian
2 cartons to	C. Bates - NYO
2 cartons to	J. Isaacs - NYO
2 cartons to	J. Warren - Richmond
Total 127	

Product Designation: M60 — Account No. 043-120-910-24

cc: C. Bates, K. Eisen, C. Levy, K. Miller, B. Schuyler, J. Scully, L. Suwarna, J. Whitman, J. Zoler

2023385060

Source: https://www.industrydocuments.ucsf.edu/docs/qhlm0000

PHILIP MORRIS U.S.A. INTER-OFFICE CORRESPONDENCE

120 Park Avenue, New York, NY 10017

TO: Mr. R. P. Heretick DATE: Revised: January 31, 1989

FROM: E. N. Herald

SUBJECT: REVISED QUANTITIES FOR PROJECT ART AD/PACKS

Listed below are revised quantities which have changed from my memo of January 29, 1989. The only changes are for test No. M57 and M58 which will be sufficient for the study.

Test Number	Test	Quantity (Cartons)
M55	Merit Free 85 mm Non-Menthol Flavor Low	344
M56	Merit Free 85 mm Menthol Flavor Low	231
M57	Merit Free 85 mm Non-Menthol Ultra Lights	231
M58	Merit Free (Control) Non-Menthol	231
M59	Next 85 mm Non-Menthol Flavor Low	344
M60	Next 85 mm Menthol Flavor Low	231

Please keep in mind that included in the above quantities are two cartons each for J. Whitman, J. Isaacs, and J. Warren.

Thank you.

Attachment

cc: C. Arterbery
C. Bates
J. Bickett
D. Birdsong
E. Gee
W. Houck
J. Isaacs
J. Jones
B. Latshaw
C. Levy
A. Manwaring
J. Myracle
D. Newman
C. Rowe
H. Spielberg
P. Strang
M. Suter
J. Warren
J. Whitman
E. Wickham

2023385061

Source: https://www.industrydocuments.ucsf.edu/docs/qhlm0000

PHILIP MORRIS U.S.A. INTER-OFFICE CORRESPONDENCE

120 Park Avenue, New York, NY 10017

TO: Mr. R. P. Heretick DATE: February 13, 1989

FROM: E. N. Herald

SUBJECT: REQUEST FOR ART AD/PACK "EXTENDED USE" PRODUCT

Attached is a request from Market Research for additional ART ad/pack product to be used for "Extended Use" testing.

CONFIDENTIAL

As we discussed, this additional product will be used in conjunction with the ad/pack test for which you are currently producing product. The intent of "Extended Use" is to offer the respondents an additional carton after they have smoked the initial five packs to give an indication of the consumers' long term intent to purchase.

Please notify me at New York extension 3682 regarding the schedule for fulfilling this request.

cc: C. Arterbery
J. Bickett
D. Birdsong
E. Gee
W. Houck
J. Isaacs
J. Jones
B. Latshaw
C. Levy
A. Manwaring
J. Myracle
D. Newman
C. Rowe
H. Spielberg
P. Strang
M. Suter
J. Warren
J. Whitman
E. Wickham

2023385062

Source: https://www.industrydocuments.ucsf.edu/docs/qhlm0000

PHILIP MORRIS U.S.A.
INTER-OFFICE CORRESPONDENCE
120 PARK AVENUE, NEW YORK, N.Y 10017

TO: Earl Herald

DATE: February 10, 1989

FROM: Jerry Isaacs

SUBJECT: Request for Consumer Test Cigarettes - Art/Ad Pack

CONFIDENTIAL

Please arrange to have the following shipped to Marketing Information Systems, Inc., as soon as possible. This product is for an Art ad/pack extended use test.

1) 450 Cartons of Merit Free (ART) Flavor Low Kings non-menthol.
2) 300 Cartons of Merit Free (ART) Flavor Low Kings menthol.
3) 300 Cartons of Merit Free (ART) Ultra Low Kings non-menthol
4) 300 Cartons of Merit Free (Control) Flavor Low non-menthol. To distinguish this package from the ART product, it will be necessary to put a small red→~~blue~~ dot on the pack. This dot can be placed on the cellophane where the UPC symbol would usually be found.

5) 450 Cartons of Next (ART) Flavor Low Kings non-menthol.
6) 300 Cartons of Next (ART) Flavor Low Kings menthol.

All of the above cigarettes should be packaged in white 10 pack cartons.

The address for shipping is:

Marketing Information Systems, Inc.
100 Sylvan Avenue
Englewood Cliffs, NJ 07632
Attention: Zack Apkarian

Please advise me regarding the schedule for fulfilling this request.

Your assistance is appreciated.

JI:tdl
21089JI

cc: C. Bates
K. Eisen
C. Levy
K. Miller
B. Schuyler
L. Suwarna
J. Whitman

2023385063

Source: https://www.industrydocuments.ucsf.edu/docs/qhlm0000

2023385064

Source: https://www.industrydocuments.ucsf.edu/docs/qhlm0000